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SONY ERICSSON MOBILE COMMUNICATIONS AB
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In response to the written opinion of the International Searching Authority forwarded together with the international search report with the office action of July 6, 2004 and in relation to the PCT demand filed August 26, 2004, enclosed a new set of claims 1 to 3 replacing current claims 1 to 4 is filed to be used as a basis for the international preliminary examination.

New independent claim 1 bases on original independent claim 1 which has been amended with features from the description and original dependent claim 2. Specifically, it has been clarified that the claimed clamshell-type mobile terminal "essentially comprises" a lower casing and an upper casing as disclosed on page 3, lines 28 to 30 of the description. Further, a feature from page 3, lines 34 to 38 of the description has been added, namely, "whereby the lower casing is the casing part, which during operating the mobile terminal is in the palm of the hand of the user whereby the upper casing is extending away from the hand of the user in an opened state of the mobile terminal and folded onto the lower casing in a closed state of the mobile terminal".

Additionally, the features of original dependent claim 2 have been added to the new independent claim 1 specifying that the "rotation axis of the hinge means forming the centre of the folding movement between the lower and the upper casing lies in the middle plane of the lower casing.

In contrary to the opinion expressed in the written opinion accompanying the international search

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report, the subject matter of new independent claim 1 is novel and inventive over the prior art.

Specifically, document D1 (Patent Abstract of JP 2002-369252) discloses a clamshell-type mobile terminal for a wireless communication system with an upper casing and a lower casing connected by a hinge means. The upper casing comprises a display and the lower casing comprises a key pad. In the area of the hinge means between the upper and the lower casing, an additional sub-display is located, which enlarges the area of the display while the phone is in an open state and which can still be seen by a user when the mobile phone is in a closed state. Further, in the clamshell-type mobile terminal of document D1, the lower casing part is the casing part, which during operating the mobile terminal is in the palm of the hand of the user, whereby the upper casing part is extending away from the hand of the user in an opened state of the mobile terminal and folded onto the lower casing in a closed state of the mobile terminal.

However, in contrary to the present invention as defined in the new independent claim 1, the hinge means of the mobile terminal of document D1 is not located and arranged so that in an opened state the lower casing lies above the upper casing enabling an easy access to input keys located close to the hinge means on the lower casing. Also, the rotation axis of the hinge means of document D1 forming the centre of the folding movement between the lower and the upper casing does not lie in the middle plane of the lower casing. In contrary hereto, the lower casing and the upper casing of the mobile terminal of document D1 extend more or less in the same plane in an opened state and the hinge means is located and arranged so that a user does not have easy access to input keys located close to the hinge means on the lower casing. This can be seen e.g. in Fig. (b) of document D1, from which it is clear that the hinge means 18 extends above the plane of the key pad of the lower casing. Further, from Fig. (b) of document D1 it is clear that the rotation axis of the hinge means lies close to the key pad plane of the lower casing.

The present invention as defined in new independent claim 1 is therefore novel over document D1.

The present invention according to the new independent claim 1 is also novel over document D2. Document D2 (GB 23 22 504 A) shows a tri-fold mobile terminal comprising a lower part, a central part and an upper part. The lower part comprises the keypad, the central part comprises a display and the upper part comprises a loudspeaker. In a closed state, the lower part is folded onto the central part and the upper part is folded onto the lower part. Document D2 therefore discloses a mobile phone of a type which is completely different from a clamshell-type mobile phone according to the present invention. Further, a tri-fold mobile phone as disclosed in document D2 is held by a user in a very different way than a clamshell-type mobile terminal. A tri-fold mobile terminal is held by a user at its central part, whereby the lower and the upper casing part extend away from the hand of the user. Thus, the input of numbers or instructions to the keypad (which is located on the lower

part) cannot be performed by the thumb of the hand holding the central part of the casing, but the user has to use the other hand in order to input numbers or instructions to the keypad. Therefore, the requirements as to the configuration and the shape of a tri-fold mobile terminal are completely different as compared to the configuration and the shape of a clamshell-type mobile phone which the user holds on its lower part thus being able to input instructions with the thumb of the hand holding the mobile terminal.

The subject matter of new independent claim 1 is therefore novel over document D2.

The subject matter of new independent claim 1 is also inventive over the prior art.

Starting from document D1 as the closest prior art document, the object of the present invention is to provide a clamshell-type mobile terminal for a wireless communication system comprising a lower casing with a keypad and an upper casing with a display, said lower casing and said upper casing being connected by a hinge means connecting the lower and the upper casing so that the lower and the upper casing can be folded onto each other, which enables to place input keys on the lower casing very close to a hinge means so that the available space for the input keys on the lower casing is used to a maximum possible extent and an input is still possible in a convenient way for a user using the hand holding the mobile terminal also for the input of numbers or instructions.

This object is achieved by a clamshell-type mobile terminal according to the new independent claim 1. Specifically, according to the present invention, the hinge means is located and arranged so that in the opened state, the lower casing lies above the upper casing enabling an easy access to input keys located close to the hinge means on the lower casing and whereby the rotation axis of the hinge means forming the centre of the folding movement between the lower and the upper casing lies in the middle plane of the lower casing. Therefore, input keys can be located very close to the hinge means on the lower casing so that a user holding the lower casing in the palm of the hand is able to operate these input keys located close to the hinge means with the thumb of the hand holding the mobile terminal. The available space for input keys on the lower casing therefore be used to a maximum possible extent whereby the input of numbers or instructions is still possible in a convenient way. This is particularly enabled by the lower casing being located above the upper casing and the rotation axis being located in the middle plane of the lower casing so that the thumb or another finger of the user's hand can be approached very closely to the hinge means without the hinge means or the upper casing forming an obstacle.

Neither the object nor the solution according to the present invention are disclosed in document D1 or document D2. Document D1 discloses a clamshell-type mobile terminal in which an additional sub-display unit is located in the area of the hinge means. This document does not deal with the

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problem of using the available space for input keys on the lower casing part to a maximum possible extent. Document D2 discloses a tri-fold mobile terminal which is held by a user at its central casing part so that the user has to use the other hand for inputting numbers or instructions to the keypad on the lower casing part. Document D2 therefore discloses a completely different type of mobile terminal. Further, the object underlying document D2 is to provide a tri-fold mobile phone which is smaller than the prior art cellular phones while the proper distance from the user's ear to mouth is maintained. Document D2 therefore deals with a completely different problem.

For the above reasons, even a combination of documents D1 and D2 would not render the subject matter obvious for a person skilled in the art. The subject matter of new independent claim 1 is therefore novel and inventive.

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New claims 1 to 3, in triple.

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New Claims

1. Clamshell-type mobile terminal (1) for a wireless communication system, essentially comprising
- 10 a lower casing (2) comprising a keypad with input keys and an upper casing (3) comprising a display, said lower casing (2) and said upper casing (3) being connected by a hinge means (4) connecting the lower (2) and the upper casing (3) so that the lower and the upper casing can be folded onto each other, whereby the lower casing (2) is the casing part, which during operating the mobile
- 15 terminal (1) is in the palm of the hand of the user, whereby the upper casing (3) is extending away from the hand of the user in an opened state of the mobile terminal (1) and folded onto the lower casing (2) in a closed state of the mobile terminal (1), whereby the hinge means (4) is located and arranged so that in the opened state, the lower casing (2) lies above the upper casing (3) enabling an easy access to input keys
- 20 located close to the hinge means on the lower casing, and whereby the rotation axis (R) of the hinge means (4) forming the centre of the folding movement between the lower and the upper casing lies in the middle plane of the lower casing.
- 25 2. Clamshell-type mobile terminal according to claim 1, **characterised in,** that the hinge means (4) comprise fixed means (5a, 5b) projecting from the display plane of the upper casing (3) and rotating means (4a, 4b) movably connecting the lower casing to the fixed means.
- 30 3. Clamshell-type mobile terminal according to claim 2, **characterised in,** that the fixed means and the lower casing respectively comprise through holes into and through which the rotating means extend.
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